Public Hearing, Legislative Office Building

February 17, 2015

Raised Bill H.B. 6759

Statement

An Act Concerning the Rights and Responsibilities of Landlords and Tenants Regarding the Treatment of Bed Bug Infestations

Dr. Gale E. Ridge

Chair of the Connecticut Coalition Against Bed Bugs,

The Connecticut Agricultural Experiment Station, New Haven, CT 06504

This bill addresses public issues of bed bug management in Connecticut to facilitate cooperation and communication between landlords and tenants. (Doggett 2012; Anderson 2008; Leverkus 2006; Abdel-Naser 2006; Pritchard 2009; NPMA 2010; Goddard 2012; Rieder 2012; CDC 2011). I will address two points, the use of "Over the Counter Pesticides" (OCP's) and vacuuming by landlords to treat for bed bugs.

The EPA (Environmental Protection Agency) and CDC (Centers for Disease Control and Prevention) consider the Common bed bug, (*Cimex lectularius* L.), a pest of "significant public health importance" and an increasing health problem throughout the United States (Rajeev 2013; CDC 2010). The CDC documented 111 cases of pesticide poisoning through misuse by untrained citizens against bed bugs (CDC 2011).

The trend for bed bug infestations to increase in private homes, condominiums, and apartments "shows no sign of slowing down" (Pinto et al. 2007; Hwang 2005; Potter 2005; Doggett 2007), due to pesticide resistance (Anderson 2012; Romero et al. 2007, Yoon et al. 2008, Seoing et al. 2010, Zhu et al. 2010; Adelman et al. 2011; Moore and Miller 2009; Wang et al 2009; Johnson 1948 (who noticed DDT resistance)) and innate bed bug behavior (Usinger 1966, Kemper 1936; Hase 1917; Johnson 1942). These are shy, crack and crevice insects, that move between a host and their harborage. They cause very high levels of anxiety from their human hosts, which is an example of a host-parasite complex. For millennia they have adapted against predation and human efforts to exterminate them (Potter 2011; Johnson 1939). One of their many survival strategies is that females hide eggs. I have discovered that females during their reproductive cycles frequently hide eggs away from their harborage, which is a form of biological insurance policy. Thus in the event that a clutch is attacked or destroyed, the sequestered eggs may likely survive to hatch. Knowing this, it is suggested that landlords be encouraged to vacuum cracks and crevices (paragraph b1, page 2 of the bill), to intercept nymphs that may have hatched from these sequestered eggs.

Additionally, there is interest to include language in the bill, allowing landlords to self-treat. Research at The Connecticut Agricultural Experiment Station and elsewhere, repeatedly show OCP Type I pesticides

sold to the public, are ineffective. Type I OCP's are less than 5% effective whereas Type II pesticides, available to Pest Management Professionals (PMP's) are up to 95% effective (Anderson and Cowles 2012). Having untrained citizens treat for bed bugs is almost always ineffective. If this clause is written into the bill, I suggest the following to increase the likelihood of success:

- 1) before treating for bed bugs, a landlord should vacuum cracks and crevices inside a living space that includes furniture, all framing, baseboards, and outlets, etc. to remove bed bug protective debris and the insects themselves; as well as allowing OCP's, if bought, deeper penetration into voids
- 2) a landlord should <u>only treat once</u> before engaging a PMP, to minimize pesticide overload in a building (CDC211), and
- 3) 10 days post treatment (a timing to intercept bed bug biology), a trained Connecticut licensed PMP must be called to inspect. Photographs of cleaning and evidence of what pesticides were used and how much, should be presented to the PMP. This will assist the PMP in assessing safety levels of pesticide load in a building. If live bed bugs are found and the PMP is engaged, it will be useful information in deciding best Integrated Pest Management (IPM) practice measures, for a safe effective treatment.

As one who deals with numerous landlord/tenant bed bug issues, I feel this bill will provide a framework on which landlords and tenants might work together. It is a great improvement over current statutes and is applicable to addressing the complex issues that are encountered in regard to this insect. I support this bill.

References

Abdel-Naser M.D., R.A. Lotfy, M.M Al-Sherbiny, N.M. Sayed Ali. 2006. Patients with popular urticarial have IgG antibodies to bedbug (*Cimex lectularius*) antigens. Parasitol Res 98:550-556.

Adelman Z.N., K.A. Kilcullen, R. Koganemaru, M.A. Anderson, T.D. Anderson, D.M. Miller. 2011. Deep sequencing of pyrethroid-reststant bed bugs reveals multiple mechanisms of resistance within a single population. PLoS ONE 6: e226228.

Anderson A.L., and K. Leffler. 2008. Bedbug infestations in the news: a picture of an emerging public health problem in the United States. J. Environ. Health 70: 24-27.

Anderson J. F. and R. Cowles 2012. Susceptibility of *Cimex lectularius* (Hemiptera: Cimicidae) to Pyrethroid Insecticides and to Insecticidal Dusts With or Without Pyrethroid Insecticides. J. Med. Ent. Vol. 105. No. 5: 1789-1795.

Centers for Disease Control and Prevention and U.S. Environmental Protection Agency. 2010. Joint Statement on Bed Bug Control in the United States from the US Centers for Disease Control and Prevention (CDC) and the US Environmental Protection Agency (EPA). Atlanta, GA: Department of Health and Human Services.

Centers for Disease Control and Prevention. 2011. Acute illnesses associated with insecticides used to control bed bugs-seven states, 2003-2010. MMWR Morb. Mortal Wkly. Rep. 60: 1269-1274.

Doggett S.L. 2007. A code of practice for the control of bed bug infestations in Australia. (http://www.bedbug.org.au/bedbug_cop.htm).

Doggett S.L., D.E. Dwyer, P.F. Peñas, R.C. Russell. 2012. Bed bugs: clinical relevance and control options. Clin. Microbio. Rec 25:164-192.

Goddard J., and R. de Shazo. 2012. Psychological effects of bed bug attacks (*Cimex lectularius* L.). Am J. Med 125: 101-103.

Hase A. 1917. Die Bettwanze (*Cimex lectularius* L.) ihr. Leben und ihre Bekämpfung. Monogr. Angew. Entomol. No. 1. Z. Angew. Entomol. IV, Beiheft I, vi +144 p., 6 pl., 131text fig.

Hwang S.W., I.J. Svoboda, K.J. De Jong, Kabasele, E. Gogosis 2005. Bed bug infestations in an urban environment. Emerg. Infect. Dis. 11: 533-538.

Johnson C.G. 1942. The ecology of the bed-bug, Cimex lectularius L., in Britain. J. Hyg. 41 (4): 345-361

Johnson M.S. and A.J. Hill. 1948. Partial resistance of a strain of bed bugs to DDT residual. Med. News Letter 12 (1): 26-28.

Johnson C.G., and K. Mellanby. 1939. Bed-bugs and cockroaches. Proc. Roy. Entomol. Soc. London (A) 14 (2-3): pg. 50.

Kemper H. 1936. Die Bettwanze und ihre Bekämpfung. Z. Kleintierk., PelztierK. 12 (3): 1-107, 18 Abb. (Band 4 der Schr. Hyg. Zool.).

Leverkus M., R.C.Jochim, S. Schäd, E.B. Bröcher, J.F. Anderson, J.G. Valenzuela, A. Trautmann. 2006. Bullous allergic hypersensitivity to bed bug bites mediated by IgE against salivary nitrophorin. J. Invest Dermatol 15: 91-96.

Moore D.J., and D.M. Miller. 2009. Field evaluations of insecticide treatment regimens for control of the common bed bug, *Cimex lectularius* (L). Pest Manag. Sci. 65: 332-338.

National Pest Management Association. 2010. The NPMA Releases First-Ever Comprehensive Global Bed Bug Study to Determine Extent of Resurgence. Available on Pestworld.org website. 15 May 2010.

Potter M.F. 2005. A bed bug state of mind: emerging issues in bed bug management. Pest Control Technol. 33: pages 88-85,88,90,92-93,96-97.

Potter M.F. 2011. The history of bed bug management. Am. Entomol. 57: 14-25.

Pritchard M.J. and S.W. Hwang. 2009. Severe anemia from bedbugs. Can. Med. Assoc. J. 181: 287-288

Paulke-Korinek M., M. Széll, H. Leferl, H. Auer, C. Wenisch. 2012. Bed bugs can cause severe anemia in adults. Parasitol Res. 110: 2577-2579.

Pinto L.J., R. Cooper, S.K. Kraft. 2007. Bed Bug Handbook. The Complete Guide to bed bugs and their control. Pinto & Associates, Inc. Maryland.

Reider E., G. Hamalian, K. Maloy, E. Streiker, L. Sjulson, P. Ying. 2012. Psychiatric consequences of actual versus feared and perceived bed bug infestation: a case series examining a current epidemic. Psychosomatics 53: 85-91.

Romero A., Potter M.F., Potter D.A. K.F. Haynes. 2007. Insecticide resistance in the bed bug: a factor in the pest's sudden resurgence? J. Med. Ent. 44: 175-178

Seong K.M., D.Y. Lee, K.S. Yoon, D.H. Kwon, H.C. Kim, T.A. Klein, J.M. Clark, S.H. Lee. 2010. Establishment of quantitative sequencing and filter contact vial bioassay for monitoring pyrethroid resistance in the common bed bug, *Cimex lectularius*. J. Med. Ent. 47: 592-599.

Usinger R.L. 1966. Monograph of Cimicidae (Hemiptera-Heteroptera). The Thomas Say Foundation Vol. VII.

Vaidyanathan R., and M. F. Feldlaufer. 2013. Review Article: Bed Bug Detection: Current Technologies and Future Directions. Am J. Trop. Med. Hyg., 88(4), 619-625.

Wang.C., T. Gibb, G.W. Bennett. 2009. Evaluation of two least toxic integrated pest management programs for managing bed bugs (Heteroptera: Cimicidae) with discussion of a bed bug intercepting device. J. Med. Ent. 46: 566-571.

Yoon K.S., D.H. Kwon, J.P.Strycharz, C.S. Hollingsworth, S.H. Lee, J.M. Clark. 2008. Biochemical and molecular analysis of deltamethrin resistance in the common bed bug (Hemiptera: Cimicidae). J. Med. Ent. 45:1092-1101.

Zhu F., J. Wigginton, A. Romero, A. Moore, K. Ferguson, R. Palli, M.F. Potter, K.F. Haynes, S.R. Palli. 2010. Widespread distribution of knockdown resistance mutations in the bed bug *Cimex lectularius* (Hemiptera: Cimicidae), populations in the United States. Arch. Insect. Biochem. Physiol. 73: 245-257.